292/39 3/1932

PATENT SPECIFICATION

Application Date: March 11, 1931. No. 7624/31.

Complete Left: May 22, 1931.

Complete Accepted: March 31, 1932.

369,736

PROVISIONAL SPECIFICATION.

Improvements in and connected with Panic Bolts and the like.

We, SIDNEY FRANCIS ADAMS, of 92, Streathbourne Road, Balham, London, S.W., and JAMES SIDNEY ADAMS, of 3 and 5, Emerald Street, London, W.C. 1, both British Subjects, do hereby declare the nature of this invention to be as follows:—

Our invention relates to panic bolts and like bolts which include a sliding bolt member retractable by rotation of a knob or handle on one side of a door and lifting of a lever or arm on the other side. The usual practice with panic bolts as used in theatres and like places is to provide a bolt casing to one face of which is pivoted a lever or arm carrying a horizontal bar which is pressed towards the door to retract a pair of vertically slidable bolts from retainers provided above the door and in the floor. The object of our invention is to improve upon bolts which can adopt this method. Another object of our invention is to enable the sliding bolt or bolts to be readily locked from the opposite side of the door by a key. A further object of our invention is to provide means to positively hold the said lever or arm against movement relative to the door when the bolt or bolts is or are retracted so that the door can be pushed or pulled open.

According to the present invention a panic bolt or the like comprises a casing, a bolt sliding through one end of said casing, a removable cover plate on said casing, a pivoted arm or lever on said cover plate, a lateral extension on the pivoted end of said arm or lever projecting through an aperture in said cover plate and engaging a rotary toothed member inside the casing so as to impart rotation thereto, a toothed bar slidable in said casing and carrying said bolt, and a key operated locking member operable from the side of the door opposite to that carrying the said casing, said locking member being adapted to act as an abutment to prevent retraction of the bolt by said arm or lever, said cover plate carrying a pivoted pawl adapted to engage said arm or lever and retain it in the unbolted position so that the door can be pulled open by a pull on said lever without operating the bolt, and means to automatically disconnect the pawl from the said arm or lever when the door is operated from said opposite side.

In the preferred form of this invention a narrow elongated rectilinear metal casing is formed with apertured lugs at its ends for screwing it to the door in a vertical direction. Through the upper and lower ends slide square section inner ends of a co-axial pair of vertical bolts which are preferably of circular section beyond the casing, the outer ends of these bolts sliding in and out of retainers. Each said square section portion is formed with an integral extension bent lateral from the bolt to a parallel portion sliding along one vertical side of the casing. One of these extensions is longer than the other and is located against the opposite side of the casing. This longer bolt extension is formed with gear teeth on its inner face, the inner face of the shorter portion being correspondingly toothed and a small diameter rotary toothed wheel meshes with both of these toothed bolt extensions. This rotary wheel is fixed to the spindle of a knob or handle located on the outer side of the door so that rotation of said knob or handle in one direction advances both of the bolts simultaneously and in the other direction retracts the bolts.

Located in about the centre of the said casing is a toothed segment which need only have two gear teeth and these teeth mesh with recesses in the edge of the said longer bolt extension which lies contiguous to the said cover plate. This segment is pivoted on a fixed pivot pin and it is apertured to receive a cranked spigot like extension of an arm or lever pivoted at one end between a pair of lugs on the outer face of the cover plate, the cover plate having a hole between said lugs to freely receive said spigot like extension. By this means as the free end of the said arm or lever is swung inwards towards the cover plate the toothed segment is rotated through a small angle to retract the bolt containing the said longer extension, the movement of this bolt being transmitted to the other by the said rotary toothed wheel and teeth meshing with it.

To enable the said lever to be pulled to open the door without operating the bolts a pawl is pivoted between a pair of small lugs on the cover plate and is adapted at its free end to pass through a hole in the said arm or lever. This pawl is a pivoted finger with a rounded free end so that it will easily enter the hole in the arm or lever and will extend beyond the front side of the arm or lever. This pawl is formed with a step on its lower edge which abuts against the outer side of the arm or lever and so prevents the arm or lever from being swung outwards from the cover plate. Should it be desired to operate the bolts to bolt the door the free end of the pawl can be raised to enable the arm or lever to be swung outwards, or should it be required to lock the door from the outside, the said knob or handle can be turned and this will apply a direct positive sliding action to the bolts, the initial movement of which is utilised to engage a cam like lateral projection on the said longer bolt extension with a cam like inwardly extending projection of said pawl passing through a slot in the cover plate. This will raise the pawl sufficiently to move its said step clear of the said arm or lever so that the arm or lever is free to swing outwards and will not prevent further motion of the bolts.

A slight lost motion between the lateral extension of the pivoted end of the arm or lever and the said toothed segment enables the aforementioned mechanical operation of the pawl to be effected.

The bolt can be locked in the bolted position by a lock fitted to the outer side of the door and formed with a rotary barrel or equivalent part extending into the casing, such barrel having a cam adapted to engage the arcuate edge of a tumbler member recessed in its edge to receive one end of a spring loaded finger pivoted between its ends and adapted to trip under a step on the inner end of the square section part of the slidable bolt carrying the said longer extension.

Dated this 11th day of March, 1931.

HUGHES & YOUNG,
9, Warwick Court, High Holborn,
London, W.C. 1, and
43, Ship Street, Brighton,
Agents for the Applicants.

COMPLETE SPECIFICATION.

Improvements in and connected with Panic Bolts and the like.

We, SIDNEY FRANCIS ADAMS, of 92, Streathbourne Road, Balham, London, S.W., and JAMES SIDNEY ADAMS, of 3 and 5, Emerald Street, London, W.C. 1, both British Subjects, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The object of our invention is to provide a construction of panic bolt in which the operating mechanism and locking device can be accommodated in a compact space. In a known form of panic bolt a pair of vertically slidable bolts are guided one through the top of a rectilinear casing and one through the bottom of the casing, each of said bars carrying toothed bar extensions slidable against diametrically opposite points of a rotatable gear wheel inside the casing so that sliding motion imparted to the bolt is transmitted in the opposite direction to the other. This motion is applied by a lever pivoted at one end to one side of the door, carried through the door and casing to the other side and having connected to its other end the usual horizontal bar which when pulled to open the door applies a sliding action to one of the said bolts by reason of a pin and slot connection of the lever to the said bolt. A finger pivoted to the lever is adapted to detachably engage by its free end an abutment on the bolt casing to hold the said lever against pivotal movement when it is not required to utilise the pull on the said horizontal bar to operate the panic bolt.

According to the present invention a pair of vertically sliding bolts are also employed and a toothed member common to both of the sliding bolts is also rotated to slide the bolts simultaneously outwards and inwards relative to the top and bottom ends of a casing the casing being closed by a cover plate, a knob or handle rotates said toothed rotary member and as distinct from the known shape and method of pivotally supporting the said lever the said lever is an L shaped member pivoted between its ends to the said cover plate and has one extremity terminating inside the said casing and having a lost motion operative connection to one of the said sliding bolts, a pawl also being pivoted to the cover plate and adapted to engage and retain the said lever against downward outward swinging movement relative to the casing, the said pawl having an extension terminating beyond its pivot inside the casing and engaging an abutment carried by one of the bolts whereby

the said pawl is raised to release the said lever in advance of movement of said lever consequent upon the rotation of said knob or handle, the said knob or handle being located in one side of the door and the said lever on the other side.

In order that our invention may be clearly understood and readily carried into effect, we have appended hereto a sheet of drawings illustrating an embodiment thereof and wherein,

Fig. 1 is a side elevation view.

Fig. 2 is a front elevation view, and

Figs. 3 and 4 are front elevation views with the cover plate removed and showing respectively the retracted and advanced positions of the bolt.

Referring to the drawings, a narrow elongated rectilinear metal casing 1 is formed with apertured lugs 2 at its ends for screwing it to the door 3 in a vertical direction. Through the upper and lower ends slide square section inner ends 4*a* and 5*a* of a co-axial pair of vertical bolts 4 and 5, upper and lower respectively, which are preferably of circular section beyond the casing, the outer ends of these bolts sliding in and out of retainers 6 in well known manner. Each said square section portion 4*a*, 5*a* is formed with an integral extension 4*b* 5*b* bent lateral from the bolt to a parallel portion 4*c*, 5*c* and sliding along opposite vertical sides of the casing as shown in Figs. 3 and 4. One of these extensions 4*c* is longer than the other 5*c* and is located against the opposite side of the casing. This longer bolt extension 4*c* is formed with gear teeth 4*d* on its inner face, the inner face of the shorter portion being correspondingly toothed as at 5*d* and a small diameter rotary toothed wheel 7 meshes with both of these toothed bolt extensions. This rotary wheel is fixed to the spindle 8 of a knob or handle 9 located on the outer side of the door so that rotation of said knob or handle in one direction advances both of the bolts 4 and 5 simultaneously and in the other direction retracts the bolts.

Located in about the centre of the said casing 1 is a toothed segment 10 which need only have two gear teeth 10*b* and these teeth mesh with recesses 11 in the edge of the said longer bolt extension which lies contiguous to the said cover plate. This segment 10 is pivoted on a fixed pivot pin 12 and it is apertured as at 10*a* to receive a cranked spigot like extension 14*a* (see Fig. 1,) of an arm or lever 14 pivoted at one end on a pin 14*b* between a pair of lugs 14*c* on the outer face of the cover plate 1*a* of the casing 1, the cover plate having a hole 1*b* between said lugs to freely receive said spigot like extension 14*a*. By this means as the free end of the said arm or lever 14 is swung inwards towards the cover plate 1*a* the toothed segment 10 is rotated through a small angle to retract the bolt 4 containing the said longer extension, the movement of this bolt being transmitted to the other 5 by the said rotary toothed wheel 7 and the teeth 4*d* and 5*d* meshing with it.

To enable the said lever to be pulled to open the door without operating the bolts a pawl 15 is pivoted on a pin 15*b* between a pair of small lugs 15*a* on the cover plate and is adapted at its free end to pass through a hole 14*d* in the said arm or lever. This pawl 15 is a pivoted finger with a rounded free end 15*c* so that it will easily enter the hole 14*d* in the arm or lever 14 and will extend beyond the front side of the arm or lever. This pawl is formed with a step 15*e* on its lower edge which abuts against the outer side of the arm or lever 14 (as shown in Fig. 1) and so prevents the arm or lever 14 from being swung outwards from the cover plate when it is pulled to open the door 3. Should it be desired to operate the bolts to bolt the door the free end of the pawl can be raised to enable the arm or lever to be swung outwards to the position shown in broken lines in Fig. 1, or should it be required to lock the door from the outside, the said knob or handle 9 can be turned and this will apply a direct positive sliding action to the bolts 4 and 5, the initial movement of which is utilised to engage a cam like lateral projection 16 on the said longer bolt extension 4*c* with a cam like inwardly extending projection 15*f* (see Fig. 1) of said pawl 15 passing through a slot in the cover plate. This will raise the pawl sufficiently to move its said step 15*e* clear of the said arm or lever 14 so that the arm or lever is free to swing outwards and will not prevent further motion of the bolts.

A slight lost motion between the rearward extension 14*a* of the pivoted end of the arm or lever 14 and the edges of the aperture 10*a* of the said toothed segment 10 enables the aforementioned mechanical operation of the pawl to be effected.

The bolt can be locked in the bolted position by a lock 17 fitted to the outer side of the door and formed with a rotary barrel or equivalent part 18 extending into the casing, such barrel having a cam 18*a* adapted to engage the edge 19*a* of a tumbler member 19 recessed as at 19*b* in its upper edge to receive one end of a spring loaded finger 20 pivoted between its ends on a pin 21 and adapted to trip under a step 22 on the inner end of the square section part of the slidable bolt carrying the said longer extension. The

tumbler member 19 pivots on the pin 12 and is behind the segment 10. When the cam 18*a* is swung downwards from the position shown in Fig. 4 against the edge 19*a* of the member 19 it presses the member 19 downwards about the pivot pin 12 and the recess 19*b* swings the finger 20 clear of the step 22.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A panic bolt comprising a pair of vertically slidable bolts slidable in a casing, a toothed member common to both of said bolts rotatable inside said casing to impart simultaneous sliding movement of the bolts outwards and inwards relative to the top and bottom ends of a casing the casing being closed by a cover plate, a knob or handle rotating said toothed rotary member and a substantially L shaped lever pivoted between its ends to the said cover plate and having one extremity terminating inside the said casing and having a lost motion operative connection to one of the said sliding bolts, a pawl also being pivoted to the cover plate and adapted to engage and retain the said lever against downward outward swinging movement relative to the casing, the said pawl having an extension terminating beyond its pivot inside the casing and engaging an abutment carried by one of the bolts whereby the said pawl is raised to release the said lever in advance of movement of said lever consequent upon the rotation of said knob or handle, the said knob or handle being located in one side of the door and the said lever on the other side.

2. A panic bolt according to claim 1 wherein the said lever engages at its end inside the casing in an aperture in a rotary toothed segment meshing with teeth in one of said sliding bolts.

3. A panic bolt according to claim 1 wherein a spring loaded finger is pivoted between its ends in the casing and is adapted at one end to trip under an abutment on one of said bolts to lock the bolts in the extended position, the other end of said finger engaging an abutment on a rotary member adapted to be moved by a key operated cam against the influence of the spring of the said finger to maintain said finger in an unlocked position free of the said bolt.

4. A panic bolt or the like of the type set forth substantially as described with reference to the accompanying drawings.

Dated this 22nd day of May, 1931.

HUGHES & YOUNG,
9, Warwick Court, High Holborn,
London, W.C. 1, and
43, Ship Street, Brighton,
Agents for the Applicants.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1932.

369736 Adams

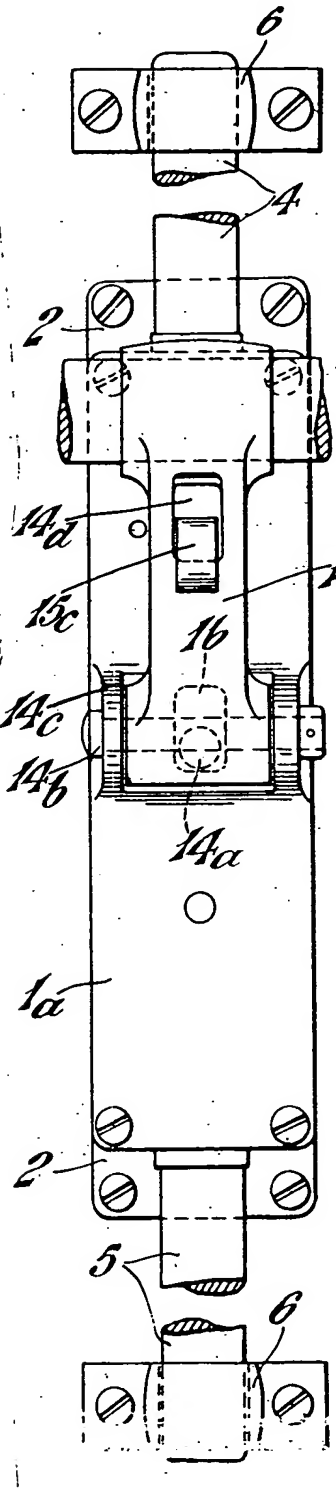

Fig.2.

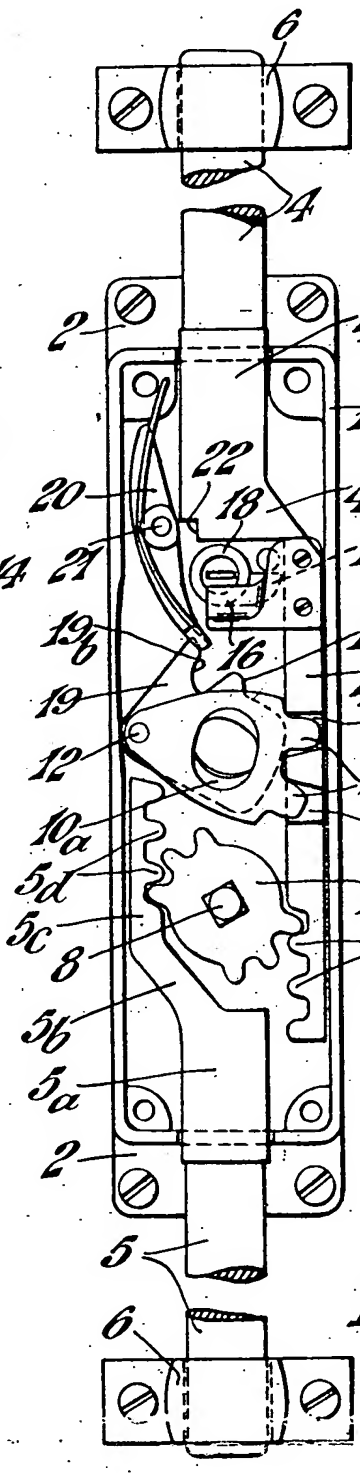

Fig.3.

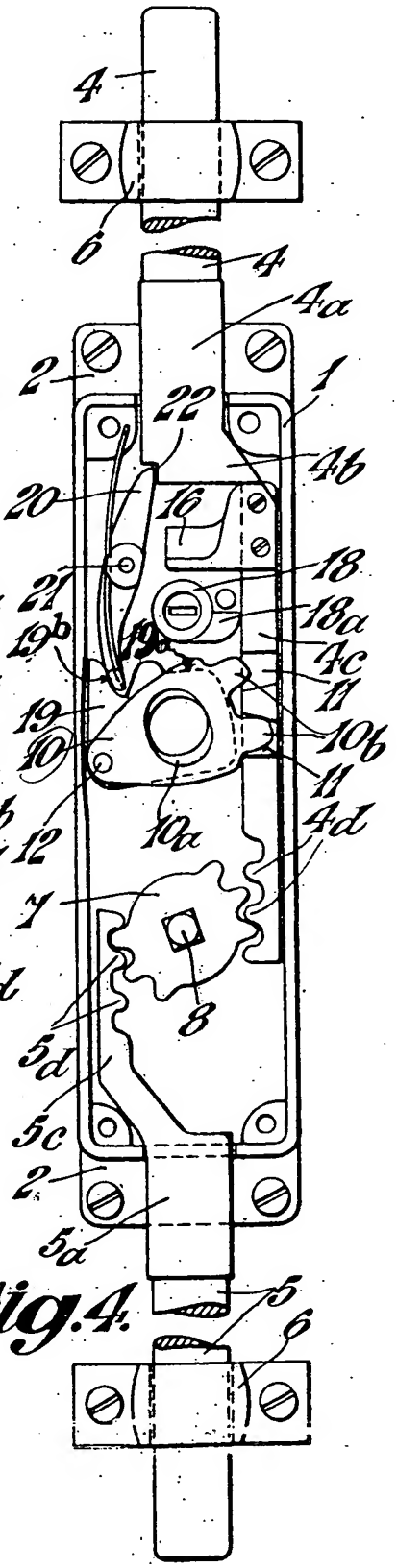

Fig.4.

Charles & Read Ltd.